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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/001,235	11/13/2001	S. Thomas Autrey	23-59243	9274

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EXAMINER	
ROSENBERGER, RICHARD A	
ART UNIT	**PAPER NUMBER**
2877	

DATE MAILED: 03/01/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Advisory Action	Application No.	Applicant(s)	
	10/001,235	AUTREY ET AL.	
	Examiner	Art Unit	
	Richard A Rosenberger	2877	

--The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

THE REPLY FILED 22 December 2003 FAILS TO PLACE THIS APPLICATION IN CONDITION FOR ALLOWANCE. Therefore, further action by the applicant is required to avoid abandonment of this application. A proper reply to a final rejection under 37 CFR 1.113 may only be either: (1) a timely filed amendment which places the application in condition for allowance; (2) a timely filed Notice of Appeal (with appeal fee); or (3) a timely filed Request for Continued Examination (RCE) in compliance with 37 CFR 1.114.

PERIOD FOR REPLY [check either a) or b)]

a) ☒ The period for reply expires *4* months from the mailing date of the final rejection.

b) ☐ The period for reply expires on: (1) the mailing date of this Advisory Action, or (2) the date set forth in the final rejection, whichever is later. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of the final rejection.
ONLY CHECK THIS BOX WHEN THE FIRST REPLY WAS FILED WITHIN TWO MONTHS OF THE FINAL REJECTION. See MPEP 706.07(f).

Extensions of time may be obtained under 37 CFR 1.136(a). The date on which the petition under 37 CFR 1.136(a) and the appropriate extension fee have been filed is the date for purposes of determining the period of extension and the corresponding amount of the fee. The appropriate extension fee under 37 CFR 1.17(a) is calculated from: (1) the expiration date of the shortened statutory period for reply originally set in the final Office action; or (2) as set forth in (b) above, if checked. Any reply received by the Office later than three months after the mailing date of the final rejection, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

1. ☐ A Notice of Appeal was filed on _____. Appellant's Brief must be filed within the period set forth in 37 CFR 1.192(a), or any extension thereof (37 CFR 1.191(d)), to avoid dismissal of the appeal.
2. ☐ The proposed amendment(s) will not be entered because:
   (a) ☐ they raise new issues that would require further consideration and/or search (see NOTE below);
   (b) ☐ they raise the issue of new matter (see Note below);
   (c) ☐ they are not deemed to place the application in better form for appeal by materially reducing or simplifying the issues for appeal; and/or
   (d) ☐ they present additional claims without canceling a corresponding number of finally rejected claims.
   NOTE: _____.
3. ☐ Applicant's reply has overcome the following rejection(s): _____.
4. ☐ Newly proposed or amended claim(s) _____ would be allowable if submitted in a separate, timely filed amendment canceling the non-allowable claim(s).
5. ☐ The a)☐ affidavit, b)☐ exhibit, or c)☐ request for reconsideration has been considered but does NOT place the application in condition for allowance because: _____.
6. ☐ The affidavit or exhibit will NOT be considered because it is not directed SOLELY to issues which were newly raised by the Examiner in the final rejection.
7. ☒ For purposes of Appeal, the proposed amendment(s) a)☐ will not be entered or b)☒ will be entered and an explanation of how the new or amended claims would be rejected is provided below or appended.
   The status of the claim(s) is (or will be) as follows:
   Claim(s) allowed: _____.
   Claim(s) objected to: _____.
   Claim(s) rejected: *1-48,50 and 51*.
   Claim(s) withdrawn from consideration: _____.
8. ☐ The drawing correction filed on _____ is a)☐ approved or b)☐ disapproved by the Examiner.
9. ☐ Note the attached Information Disclosure Statement(s)(PTO-1449) Paper No(s). _____.
10. ☒ Other: *Note the attached form PTO-829, Notice of References Cited*

1. The proposed amendments to the claims will be entered upon the filing of a appeal.

2. The Declaration of Dr. Stephen Edward Bialkowski on 22 December 2003 has been considered but has not been found to be persuasive.

The declaration, in the second paragraph of page 3, characterized the detected signal of the device of the Watanabe et al reference as being "the flow of gas due to the expansion of the heated sample" [page 3, lines 12]. This is not in accordance with the teachings of that reference, which characterize the operation of the device as being "[w]hen the sample is irradiated with monochromatic, chopped light it alternately heats and cools and the heat flow causes the fluid surrounding the sample to expand and contract . . ." [column 1, lines 60-63]. The expansion and contraction of the surrounding gas is considered in the art an acoustic signal; as a single example, see Caro et al (US 5,348,002), which, in column 4, lines 49-56, describes the same effect discussed by the Watanabe reference:

> As a result of the periodic heating of the material by the modulated absorption of light, thermal waves are generated in the medium, usually a solid. These thermal waves cause thermal fluctuations in a surrounding medium, usually a gas, with the result that a periodic acoustic wave, with a frequency equal to that of the light modulation, is launched into that surrounding medium. This "photoacoustic" wave can be detected, for example by means of a microphone positioned

> within the surrounding medium. The magnitude of the acoustic signal is determined by the degree of absorption of the radiation in the sample.

Note that the wave "launched into the surrounding medium" is, and is called, an acoustic wave, and is, and is called, an "acoustic signal". Thus the argument in the declaration that the device of the Watanabe et al reference does not detect an "acoustic signal" is not persuasive because, as shown by Caro et al reference, the physical mechanism at work in the Watanabe et al device does produce what in the art are considered and recognized to be "acoustic waves" and "acoustic signals".

As noted above, the declaration suggests a different mode of operation than the Watanabe et al reference itself set forth, that it is due to "the flow of gas due to the expansion of the heated sample" rather than heat flow from the sample to the gas. Assuming this explanation is taken as correct, the art sill recognizes the signal produced is an "acoustic signal"; see, as a single example, Ushio et al (US 6,108,096), column 21, lines 41-56:

> The photoacoustic transducer 120 detects and converts acoustic sounds, generated in the sample SA due to volumetric changes in the sample arising from rapid heating and cooling of the sample as the sample receives a light pulse, to corresponding electric signals. Such heating and cooling occurs with each pulse of irradiation light L2 on the sample SA. Various information related to non-radiant transition of the sample can be obtained through analysis of the amplitude, phase, and other characteristics of the electrical signals. The

> magnitude of the acoustic signals is normally proportional to the instantaneous thermal energy of the sample as it receives the light pulse and thus to the amount of light of the pulse absorbed by the sample. As a result, the amount of light absorbed by the sample can normally be determined from the acoustic signals.

Note that this suggests the same mode of operation as suggested in the declaration, i.e. the expansion (or "volumetric changes") of the sample, and refers to the resulting change in the surrounding gas as "acoustic sounds" and "acoustic signals". So even if the suggested mode of operation taken as correct, the resulting "gas flow" is still recognized in the art as being, and is called, an "acoustic signal".

While it is true that applicant may be his own lexicographer, when, as in this case, a term is to be taken in a highly technical, specific, or unusual sense rather than in the usual range of meanings of the term, then the specification must clearly set forth that specialized definition. There appears to be nothing in the specification that would lead those in that art to consider that the term "acoustic signal" as intended by Applicants in the specification as filed would exclude the common usage in which, as illustrated by the Caro et al and Ushio et al references above, includes the effects generated and measured in devices such as the Watanabe et al device.

The declaration, on page 2, the second paragraph of section 8, first two lines, characterizes an "acoustic signal" as a "longitudinal pressure wave". By whichever mechanism the signal generated in the device of the Watanabe et al reference is

generated, the signal is pressure waves moving outwardly from the surface of the heated sample at the frequency of the modulated light beam, and as the pressure waves they are longitudinal, not transverse, waves, i.e., they move along, rather than perpendicular to, the direction of movement of the waves. Thus what is detected by the device of Watanabe et al are acoustic waves by the definition of acoustic waves (i.e., longitudinal pressure waves) used in the declaration itself.

The declaration also ignores the fact that the final rejection is under 356 USC 103(a), not under 35 USC 102. The Watanabe et al reference clearly and repeatedly refers to his device as being a "photoacoustic" device, and presents a standard understanding of the underlying mode of operation of photoacoustic devices. So even if it were true that the specific arrangement of the reference somehow detected something other than the signal generated by heat flow from the sample to the gas and/or volumetric changes of the sample, the reference would still teach that such acoustic detection would be possible, both by the repeated use of the characterization of the device as a "photoacoustic" device and by the statement of the underlying mode of operation, which is a standard understanding of the mode of operation of photoacoustic devices. The fact that for the particular purpose of the reference one type of detector is preferred over other known types does not remove from the art the knowledge of the other types, and would not lead those in the art to mistakenly believe that those other previously known types would have somehow

stopped working. Thus, as set forth in the statement of the final rejection, it would have been obvious to use other previously known detection arrangements when the specific application.

The declaration states, on page 2, in section 8, that "[i]n Applicant's disclosed invention the signal detected is the longitudinal pressure wave (i.e. acoustic signal) launched through the solid matrix, not the expansion of the solid compressing the gas above the sample." It is noted that this in not correct. The disclosed invention includes embodiments in which the detected acoustic signal is launched though a gas, not a solid matrix (see, for example, the embodiments of instant figures 12a and 12b, which are described in the specification (page 18, first full paragraph) as being "air-coupled". The presence of this embodiment, with the explicit reference to the "air coupled" device providing an "acoustic wave" demonstrates that such waves in air are considered by those in the art, including applicants, as being "acoustic waves", and that the argument in the declaration that the instant "acoustic signals" must pass though a solid medium" is inconsistent with the specification as filed. Also not that most of the instant independent claims are not limited detection of acoustic signals passing through a solid rather than a gas and thus these comments are not relevant to those claims.

3. Papers related to this application may be submitted to Group 2800 by facsimile transmission. The faxing of such papers must conform to the notice published in the Official Gazette, 1096 OG 30 (15 November 1989). The fax number is (703) 872-9306

Any inquiry concerning this communication or earlier communications from the examiner should be directed to R. A. Rosenberger whose telephone number is (703) 308-4804.

Any inquiry of a general nature or relating to the status of this application should be directed to the Group receptionist whose telephone number is (703) 308-0956.

R. A. Rosenberger
6 February 2004

Richard A. Rosenberger
Primary Examiner